UA2731

Broadband Amplifier

Data Sheet

DS-2731-01

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UA2731

Broadband Amplifier

1. Product Description

The UA2731 general purpose wideband and low current amplifier IC with internal input/output matching is packaged in a 6-pin SOT363 plastic package.

2. Features

- ❑ Single 3.3V power supply
- ❑ Internally matched to 50Ω
- ❑ Very wide frequency over DC to 3.8 GHz
- ❑ Over 22.5 dB linear gain at 2.2 GHz
- ❑ High frequency gain peaking for cable loss compensation
- ❑ Unconditionally stable
- ❑ P1dB over -4 dBm at 2.2 GHz
- ❑ Low supply current about 6 mA.

3. Typical Applications

- ❑ DBS
- ❑ LNB IF Amplifier
- ❑ DVB
- ❑ Cable
- ❑ ISM
- ❑ General Purpose

4. Pin Configuration

Table 1 Pin Descriptions

Pin #	Description
1	Vcc
2, 5	GND1
3	RF out
4	GND2
6	RF in

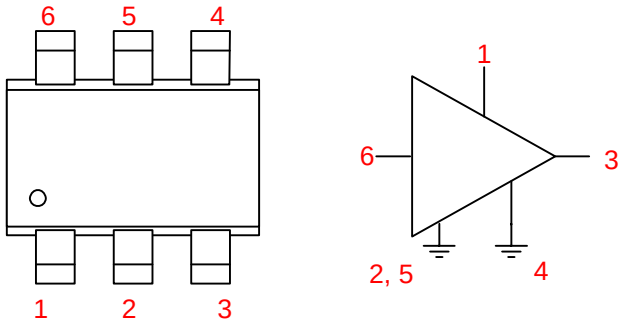
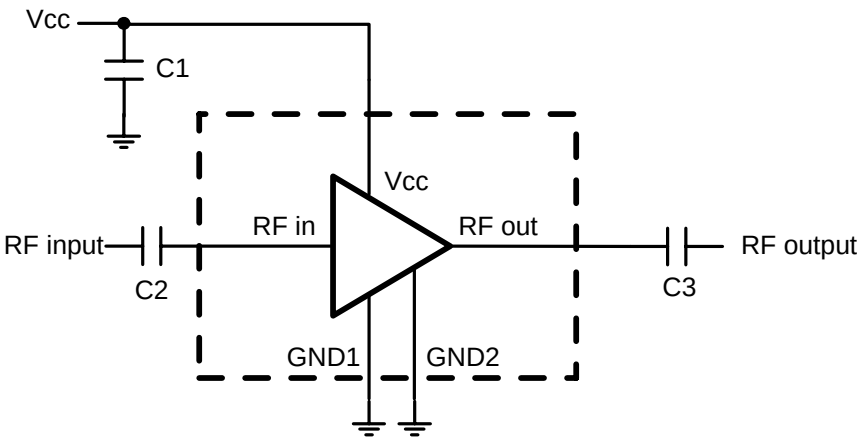


Fig. 1 Simplified Outline (SOT363) and Symbol

5. Application Circuit



C1=1nF, C2=100pF, C3=100pF

Fig. 2 Application Circuit

6. Operating Condition

Table 2 Absolute Maximum Ratings

Symbol	Parameters	Conditions	Min.	Max.	Unit
Vcc	DC Supply Voltage	RF input AC coupled	-	5	V
Icc	Supply Current		-	10	mA
P_{tot}	Total Power Dissipation	$T_a \leqq 90$ ℃	-	50	mW
T_{ST}	Storage Temperature		-65	150	℃
T_j	Operating Junction Temperature		-40	150	℃
P_D	Maximum Drive Power		-	-15	dBm

Table 3 Thermal Characteristics

Symbol	Parameters	Conditions	Value	Unit
R_{th}	Thermal Resistance from Junction to Solder Point	P_{tot} = 30 mW; $T_a \leqq 90$ ℃	300	K/W

7. Electrical Characteristics

Table 4 Electrical Characteristics

Vcc = 3.3 V; Icc = 6 mA; T_a = 25 ℃; unless otherwise specified.

Symbol	Parameters	Conditions	Min.	Typ.	Max.	Unit
Icc	Supply Current		-	6	-	mA
$\|S_{21}\|^2$	Insertion Power Gain	f = 100 MHz	-	15.5	-	dB
		f = 0.9 GHz	-	20.5	-	dB
		f = 1.8 GHz	-	22	-	dB
		f = 2.2 GHz	-	22.5	-	dB
		f = 2.5 GHz	-	22	-	dB
$\|S_{11}\|^2$	Input Return Loss	f = 0.9 GHz	10	-	-	dB
		f = 2.2 GHz	10	-	-	dB
$\|S_{22}\|^2$	Output Return Loss	f = 0.9 GHz	10	-	-	dB
		f = 2.2 GHz	10	-	-	dB
$\|S_{12}\|^2$	Isolation	f = 0.9 GHz	-	30	-	dB
		f = 2.2 GHz	-	31	-	dB
NF	Noise Figure	f = 0.9 GHz	-	3.0	-	dB
		f = 2.2 GHz	-	3.2	-	dB
BW	Bandwidth	at $\|S_{21}\|^2$-3 dB below flat gain at 0.9 GHz	-	3.8	-	GHz
K	Stability Factor	f = 0.9 GHz	-	1.4	-	-
		f = 2.2 GHz	-	1.4	-	-
$P_{L(sat)}$	Saturated Load Power	f = 0.9 GHz	-	0	-	dBm
		f = 2.2 GHz	-	-1.5	-	dBm
$P_{L,1\ dB}$	Load Power	at 1 dB gain compression; f = 0.9 GHz	-	-3.5	-	dBm
		at 1 dB gain compression; f = 2.2 GHz	-	-4	-	dBm

Caution: ESD sensitive.

8. Package Drawing

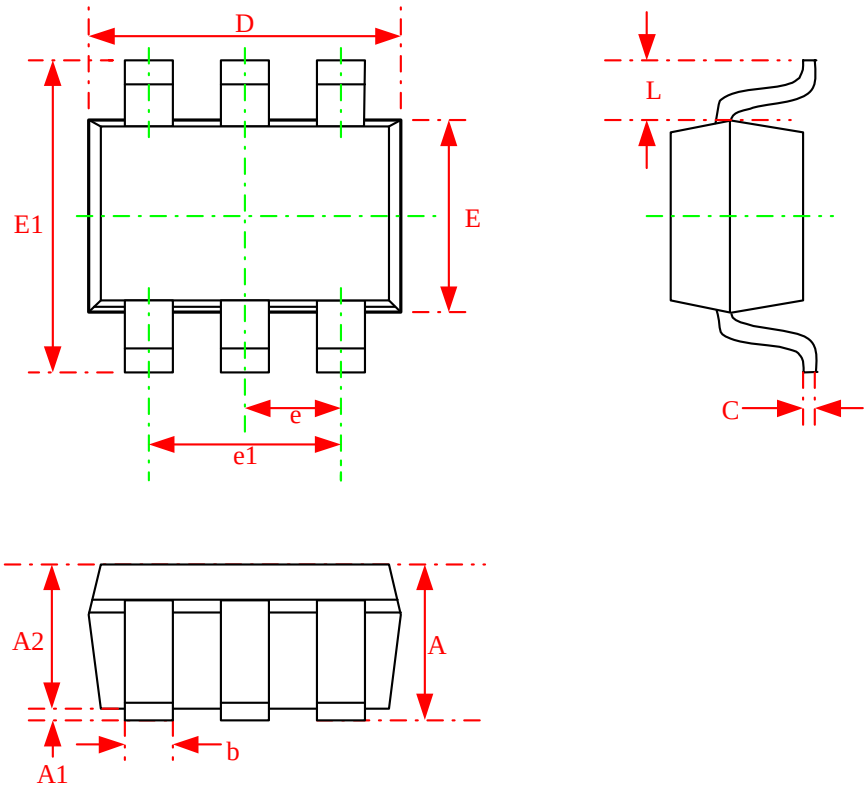


Fig. 5 Package Outline

Table 5 Dimension Description

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	.038	.044
A1	0.025	0.10	.001	.004
A2	0.875	1.00	.035	.040
b	0.20	0.40	.008	.016
C	0.10	0.15	.004	.006
D	1.90	2.10	.076	.084
E	1.15	1.35	.046	.054
E1	2.00	2.20	.080	.088
e	0.65 BSC.		.026 BSC.	
e1	1.30 BSC.		.052 BSC.	
L	0.425 REF.		.017 BSC.	

Revision History

Revision	Date	Description of Change
0.0	2006/03/14	Original

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